

A NEW SPECIES OF *PSILOPSOCUS* ENDERLEIN (PSOCOPTERA) FROM AUSTRALIA

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Abstract

Psilopsocus parvus sp. n., the second Australian species of the genus, is described from Queensland. Its only Australian congener, *Ps. mimulus* Smithers, is known to be a wood borer in the nymphal stages. This unusual habit seems likely also in *Ps. parvus* but as nymphs are not available this cannot yet be confirmed.

Introduction

Psilopsocids are extremely uncommon in collections and most of the seven known species have been described from very limited material. The genus is known from the Philippines, Manus Island, Papua New Guinea, Peninsular Malaysia and Australia. Nymphs of what is probably another species have been found in South Africa but adults which can be associated with them have not yet been recorded. The nymphs from South Africa show similar modifications to those of *Ps. mimulus* Smithers and are probably wood borers, as are those of *P. mimulus* (Smithers, 1995b).

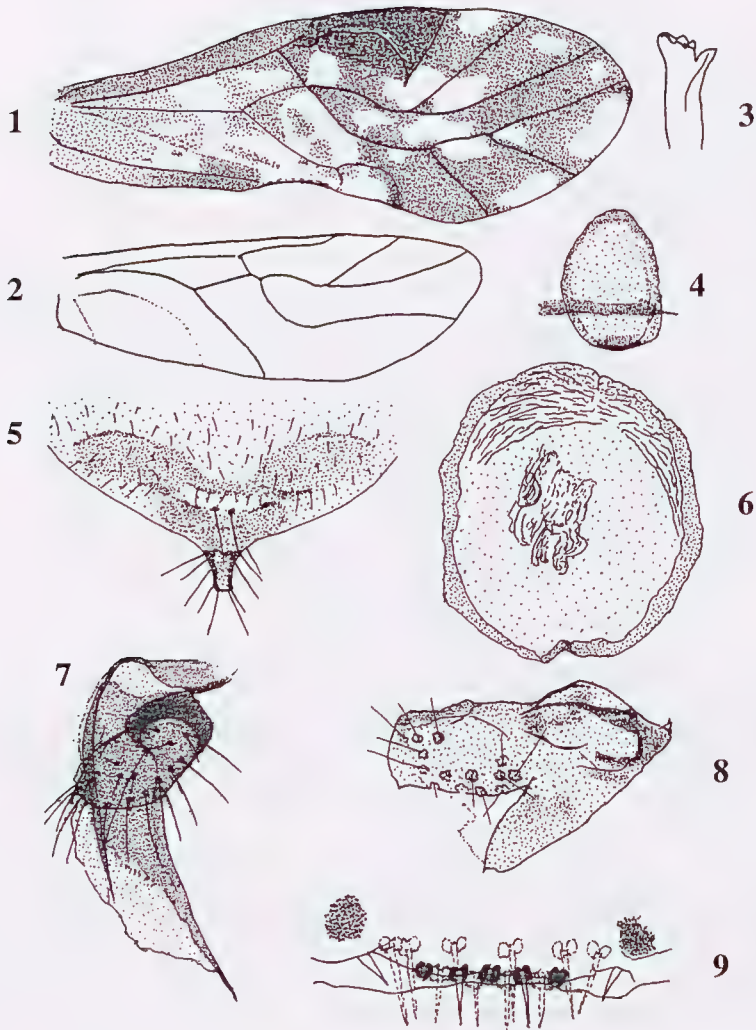
A second Australian species of *Psilopsocus* is described here. Wood boring in this species cannot be confirmed as nymphs have not yet been found.

Psilopsocus parvus sp. n.

(Figs 1-9)

Material examined. *Holotype* ♀, QUEENSLAND: ex Malaise trap, 11 km W. by N. Bald Hill, McIlwraith Range, 500m, 13.44S 143.20E, 26.vi-13.vii.1989, I.D.Naumann (in Australian National Insect Collection, Canberra). 1 ♂, Pyrethrin knockdown/RF, West Claudie River, Iron Range, 3-10.xii.1985, G.Monteith and D.Cook (in Queensland Museum, Brisbane). As this specimen was probably teneral when collected, is in poor condition and may not be conspecific with the holotype it should not be regarded as a paratype.

Female. Colouration (in alcohol). Head pale brown with darker markings as follows: Narrow patch along each side of median epicranial suture and across back of head and adjacent to compound eyes; a median V-shaped mark on frons anterior to ocellar tubercle. Postclypeus grey-brown with indistinct, parallel, longitudinal, brownish striae. Labrum dark brown. Scape and pedicel of antenna pale, first flagellar segment brown except for a short, pale length at base. Eyes black. Ocellar tubercle dark brown. Maxillary palp with first and second segments pale, third and fourth segments dark brown. Antedorsum of mesothorax brown anteriorly, paler posteriorly. Thoracic pleura mostly brown. Legs brown, only junction of femur and tibia of fore legs pale. Fore wings (fig. 1) with brown pattern. Hind wings (fig. 2) hyaline, very faintly tinged with brown. Abdomen pale with sclerotized terminal structures brown.



Figs 1-9. *Psilopsocus parvus* sp. nov. (1) Forewing; (2) Hindwing; (3) Lacinia; (4) Sclerotization of ninth sternite; (5) Subgenital plate; (6) Phallosome; (7) Gonapophyses; (8) Male paraproct; (9) Female labral sensilla.

Morphology. Length of body: 2.5 mm. Median epicranial suture very distinct. Vertex broadly rounded. Postclypeus not very prominent. Labrum with well developed anterolateral 'styli' and a small, pointed spur on inner side just mesad of position of usual lateral sclerotized patch on each side. Arrangement of anterior marginal sensilla as in figure 9. Length of first flagellar segment: f1: 0.50 mm. Eyes moderately large. IO/D: 1.3; PO: 0.6. Anterior ocellus smaller than lateral ocelli. Lacinia (fig. 3). Hind femur with ventral row of 14 fine setae. Measurements of hind leg: F: 0.49 mm; T: 0.93 mm; t1: 0.30 mm; t2: 0.05 mm; t3: 0.07 mm; rt: 6:1:1.4; ct: 13,1,1. Fore wing length: 2.9 mm. Fore wings glabrous. Pterostigma very wide at hind angle, which is very acute, with well developed spurvein. Broad, rugose, heavily sclerotized area of membrane present behind R₁ basad of spurvein. Pterostigma similarly rugose. Costal vein basad of pterostigma somewhat ill-defined, well defined as usual distad of stigmapophysis. Rs-M fusion very short in one wing of type, veins meeting almost in a point in the other wing. Veins in proximal part of wing less well defined than in distal half. Angle of Rs fork very small, opposite hind angle of pterostigma. Cu_{1a} arises well away from wing margin, evanescent in basal half. Cu_{1b} evanescent. Hind margin of wing a little thickened just basad of Cu_{1b} junction with wing margin. Hind wing length: 2.1 mm. Hind wings glabrous except for one or two minute setae on margin between R₂₊₃ and R₄₊₅. Rs and M fused for a length. Cu₂ and IA hardly discernible, the former more obvious near base. Epiproct (damaged in preparation) apparently simple, rectangular with posterior margin shorter than proximal margin, with a few large setae in distal half and some smaller setae in basal half. Paraproct triangular with large setae along and adjacent to hind margin, a few smaller setae scattered over posterodorsal third of the paraproct. Trichobothrial field ovoid, with about fourteen trichobothria, loosely placed over the field. Cuticle between 'basal rosettes' of the trichobothria reticulate. Subgenital plate (fig. 5, slightly tilted in preparation, dark areas symmetrical) with posterior lobe narrowed in distal half, with a sclerotized band along each side of narrowest part. Posterior lobe glabrous except for a median pair of long setae near base of wider part and a row of long, marginal setae on distal part of posterior lobe. Subgenital plate otherwise sparsely setose. Sclerotized area narrow medially, broader laterally. Sclerotizations of ninth sternite simple, weakly developed (fig. 4). Gonapophyses (fig. 7). Ventral valve finely pointed. Dorsal valve broad basally, narrowing abruptly to a fine point distally; lightly sclerotized except for a more heavily sclerotized, dorsal, longitudinal supporting edge which extends to form the distal point. External valve ovoid, with strong setae.

Male. Colouration. A single male from the West Claudie River appears to belong to this species. It had probably just undergone its final moult when it was collected. It was in poor condition and there was no colour pattern.

Morphology. Length of body not measurable. Length of flagellar segments: f1: 0.67 mm.; f2: 0.67. Eyes extremely large and prominent, almost abutting

ocellar tubercle on front of head. IO/D: 0.46; PO: 0.93. Ocelli very large and prominent. Measurement of hind leg: F: 0.54 mm; T: 1.04 mm; t1: 0.3 mm; t2: 0.05 mm; t3: 0.08 mm; rt: 6:1:1.6; ct: 11,1,1. Fore wings damaged. Hind wings lost. Paraproct (fig. 8, damaged in preparation) with trichobothria scattered over the large field, reticulation of cuticle between setae well developed. Posterior lobe of paraproct bearing a small, apical, pointed sclerite. Hypandrium rounded behind, with a large seta near middle of hind margin and smaller setae scattered over the hypandrium. A series of about nine very small setae protrude posteriorly along the middle section of the hind margin. Phallosome (fig. 6) almost circular, the parameres touching each other behind in the midline, the anterior margin of the ring with suggestion of median division. Outer parameres absent. Penial bulb membranous, wrinkled in a small part of the middle area but lacking any obvious sclerites.

Discussion

Psilopsocus mimulus, the only previously described Australian species of *Psilopsocus* Enderlein, is remarkable for the fact that its nymphs are highly modified and adapted for life in tunnels which they bore longitudinally in twigs of the Australian native tree *Syncarpia glomulifera* (Smith) Niedenzu and introduced *Pinus radiata* D. Don. (Smithers 1963, 1983, 1995a, 1995b, 1997). The nymphs are cylindrical in general body form and the hindmost segments and terminal structures of the abdomen are greatly modified and heavily sclerotized, forming a hard plug which very effectively seals the lumen of the tunnel in which the nymphs spend most of their time (Smithers 1963, 1995a). The adults, however, are entirely bark-dwellers; they neither bore into wood nor show any obvious modification for life in tunnels.

Psilopsocus parvus is easily distinguished from *Ps. mimulus*. It is much smaller (fore wing length of *Ps. mimulus* is 5.4 mm, of *Ps. parvus* 2.9 mm) and in *Ps. mimulus* fore wing vein Cu₁ forks about half way between its separation from M+Cu₁ and the wing margin to give a much elongated areola postica of unusual shape whereas in *Ps. parvus* Cu₁ forks much closer to the wing margin. In *Ps. nigricornis* Enderlein (New Guinea) the dorsal valve of the gonapophyses is broad at the base and tapers gradually to a point whereas in *Ps. parvus* the dorsal valve is broad but narrows abruptly and distally ends in a long, finely pointed extension. *Ps. parvus* can be readily distinguished from the remaining species of the genus by differences in detail of fore wing pattern. In *Ps. malayanus* New and Lee (Peninsular Malaysia), *Ps. manus* Smithers and Thornton (Manus Island) and *Ps. nebulosus* Mockford (Philippines) there is no pale lunule near the wing margin in cell R₅. In *Ps. marmoratus* Smithers and Thornton (New Guinea) there is pale lunule in cell M₃ near the margin but not one in that position in *Ps. parvus*. With a wing length of 4.5 mm *Ps. pulchripennis* Smithers and Thornton (New Guinea) is larger than *Ps. parvus* and the fore wing cells M₁, M₂ and M₃ are centrally darker than they are adjacent to the veins. In addition to the above and other wing pattern differences, differences in detail

in the male and female genitalia, shape of the male paraprocts, differences in the shape and arrangement of setae and sclerotization of the subgenital plate and in the sclerites associated with the entrance to the spermatheca can be used to identify the species.

Acknowledgements

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